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Wildlife

IN NORTH CAROLINA

SORA

SEPTEMBER 1948

NEXT YEAR'S DEER CROP

These youngsters will be big enough for the game bag two years from now, assuming that they are allowed to roam in the woods under their mother's care. Mis-guided kindness on the part of humans often results in fawns being picked up from the woods and carried away as pets. People often find fawns bedded down in the woods and, because the parents are nowhere in sight, assume that they have been orphaned or deserted. In nearly all cases where fawns are found by themselves in the woods the parent animals are somewhere about and will take care of their young if left unmolested. Fawns maturally have a lean, emaciated appearance, and this fact often leads people to believe that they must be "rescued". It is illegal to take fawns. This fact should be borne in mind next spring when the new crop comes on.

Although deer are easy to raise in captivity, they become a nuisance when they grow up, and often become vicious and dangerous.

WILDLIFE IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A bimonthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

STATE OF NORTH CAROLINA

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September 1948 **Vol. XII No. 5**

COVER

Although the sora is one of the most abundant migratory game birds to visit this state, it is one of the least known. The sora is a small marsh bird which will be found most numerous along the marshes on the coast. It is considered a delicacy, and 20 per day are allowed in the bag limit.

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Wildlife in North Carolina recognizes the need for close coöperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

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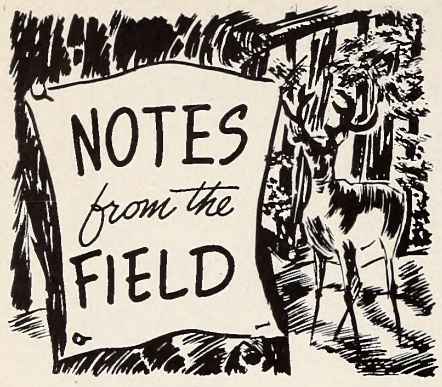
Beginning with this issue Wildlife in North Carolina goes on a monthly basis. Because no increase in subscription rate is contemplated, we believe that our readers are getting a real bargain. The new style of type and page lay-out is designed to make easier reading. If you enjoy this magazine, show it to your friends. They may wish to subscribe.

Rod Amundson, *Editor.*



FISH RESOURCES OF THE BAY LAKES

By EDWARD E. HUESKE

Introduction

Eastern North Carolina contains a number of natural lakes which present a rather unusual situation, particularly regarding the fish population. Some of these lakes have provided satisfactory fishing while others have offered very little in this respect. In the summer of 1947 a survey was made to obtain fundamental data to be used as a basis for fisheries management. The lakes surveyed were Jones, Salters, Singletary, White and Black lakes in Bladen County, and Waccamaw in Columbus County. The type of survey conducted was a reconnaissance survey with emphasis placed on fish population study. An initial survey of this type is quite desirable because it provides fundamental information for the fisheries biologist and brings to light certain fisheries problems that deserve further study.

Methods and Equipment

The reliability of a fisheries survey is dependent upon the methods used. In order to obtain satisfactory data the collection of fish, using a variety of equipment and methods, was made to determine the species present, their relative numbers, and reproductive status.

In shallow water with a suitable bottom, small minnow seines were used. These seines were the common type, being six feet or 20 feet in length and four feet deep. A seine 20 feet long and four feet deep with ½ inch mesh was used where conditions permitted.

Gill nets and a trammel net were set in coves, near the shores, in deep water, and elsewhere in order to get a sample of fish that would be as complete as possible. The gill nets were 1½, 1¾, and two inch bar mesh, the lengths being 10, 15, and 20 yards. The depth of these nets varied from four to six feet. The trammel net was 20 yards long, five feet deep, and had a bar mesh of 1½ inches. These nets were checked each morning, after which they were frequently moved to a new location. The number set varied according to the results obtained. In Lake Waccamaw only one net was set while in Salters Lake as many as 34 were used. Interference by fishermen in Lake Waccamaw was the limiting factor at that lake. Netting proved to be very satisfactory in collecting the larger specimens of fish, particularly rough fish.

Cube root, 5% rotenone content, was used extensively, especially in shallow water. This was by far the most effective method for collecting as much variety in habitat as possible. Ten to twenty yards of shore line were covered by each sample. These spot samples were also taken in the deeper water. In the smaller lakes of the group surveyed about eight samples were taken. However, in Lake Waccamaw the number was increased to 14 because of the size of the lake. The amount of rotenone used depended on the depth of the water and from one to four pounds were applied for each sample. This small quantity was effective because of the high water temperature and because of the shallowness of the water. In most cases the water was less than three feet deep.

In White Lake a trot line was set in an attempt to take eels, but each time the catch was entirely catfish. This line had 18 hooks and was set near the shore with the hooks resting near the bottom. The trot line was not used in the other lakes.

A number of fishermen at White Lake and Lake Waccamaw were very coöperative in that they permitted necessary data to be taken from their catch. This was very desirable because it provided information based on an actual creel, thus adding considerably to the data obtained in routine fish collection. The tackle used by the fishermen consisted of fly rods, casting rods, and pole and line with live bait.

After the fish were collected certain data were recorded in order that a permanent record would be available for future reference. These collections were assorted according to species and size and habitat data recorded. Thus, every fish collected can be traced to the exact place of collection, method used, habitat, and date. Data recorded for adult game fish included the total length, standard length, weight, and sex. Several scales from each specimen were placed in envelopes and kept for age determination.

In order that a permanent record be made of the various species of fish collected from each lake, a few specimens of each species were preserved in formaldehyde solution. This material is available for taxonomic study.

A number of sportsmen were contacted for their opinion regarding such points of interest as fishing pressure, species most frequently caught, and other information of a similar nature.

Lake Waccamaw

Lake Waccamaw is by far the most productive lake of the group surveyed and consequently provides a lot of good sport for fishermen. This lake is known

for its excellent black crappie and white perch fishing which forms the greatest attraction for fishermen. A number of sportsmen also find some pleasure in the largemouth bass and bluegill fishing. However, this is considered secondary at present.

During the survey more than twenty species of fish were collected from Lake Waccamaw. This collection represents a greater variety than is found in any of the other lakes that were surveyed. It is true that a few species of minnows known to occur in the lake were not collected. However, with this exception the collection is believed to be complete. One of the factors that is partly responsible for the quality of fishing is the presence of a fairly good supply of forage fish. This undoubtedly is why there is such a contrast in fishing in Lake Waccamaw with that of some of the other lakes surveyed where the supply of forage is exceedingly poor. (See Table 1 for a list of the fish collected from Lake Waccamaw.)

It is noted that Lake Waccamaw contains a number of predator species such as the bowfin, jack, gar, bass, crappie, eel, and yellow perch. These fish, together with the fishermen, cause a great amount of pressure on forage fish, especially since there is very little cover in the lake. The bluegill seems to be the dominant forage source of most of the forage fish and this demonstrates the efficiency of its reproduction particularly because of the fact that it was collected rather frequently.

In view of the fact that the survey was made to obtain information that can be used in management for better fishing, it follows that most consideration should be given to species which provide the greatest sport for the fishermen. The scales of the white perch, black crappie, largemouth bass, and bluegills have been examined and the growth of each species is shown in Figure 1. These growth curves are based on the total lengths of the fish collected and the number used to plot each curve is given in the discussion of that particular species. It is to be remembered that if scales from a much larger number of specimens were available, the growth curves might show some variation from those presented in this report. However, it can be said reasonably that this variation would not be significant from the standpoint of practical fish management.

Scales from forty-nine white perch were examined. The entire data on white perch was taken from fish caught by fishermen. This is a good source of information in that it gives data from fish actually occurring in a creel. Small white perch were not collected by the survey crew. This does not necessarily mean that there is a lack of small white perch because this species seems to prefer the open deeper water. It is noted in Figure 1 that the age of white perch caught by fishermen varied from three to six years. However, only one six-year-old fish was taken and only four of the three year age class. The four year old class constituted the majority of the catch. This age class averaged approximately seven to eight inches and, as shown in Figure 2, forms 44% of the total number of fish caught. Figure 2 shows a graphical representation of the total number of fish grouped according to the nearest centimeter, along with the number of specimens examined. The total length of each group is the average total length of all specimens within one centimeter range. The white perch is essentially an anadromous species. However, in Lake Waccamaw it has become somewhat landlocked because of a spillway built several years ago, and is apparently doing quite well. This is not uncommon for this species as it is found landlocked elsewhere in North Carolina, Lake Mattamuskeet and Lake Phelps particularly, and likewise seems to be well adapted.

The black crappie ranks second in popularity with fishermen. This species is reported to be increasing in numbers and the survey shows a similar trend. Danger of overpopulation however, does not exist at present. This trend toward larger numbers is indicated by the regularity of its reproduction and by its rate of growth. Most of the small black crappie, about 2¼ inches average length, were only a few months old. Growth in the larger fish was most rapid during the first two or three years. Of the larger

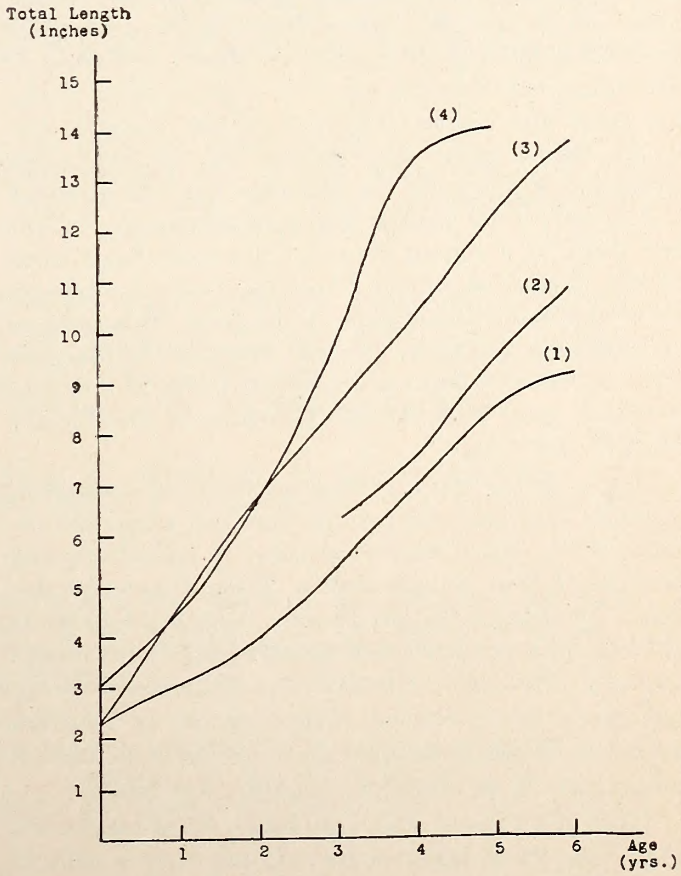


Figure 1. Growth of bluegills (1), white perch (2), black crappie (3), and largemouth bass (4) in Lake Waccamaw.

crappie the majority were three years old. The growth curve for the black crappie is shown in Figure 1. Nineteen specimens were available for data, some of the larger fish having been caught by fishermen.

The largemouth bass, a fish of widespread popularity, is apparently decreasing in numbers. This is evident because of the lack of young largemouth bass present in the fish collections. From the data collected it is difficult to determine if this lack of young bass is the result of poor reproduction or simply the result of heavy predation. Possibly it is a combination of both of these causes along with some indirect ones. The situation regarding the largemouth bass population in Lake Waccamaw should be given further investigation. Like the black crappie, growth of the bass is comparatively rapid through the third year, but after this there is very little growth. According to age determination of twenty-four specimens, the average five year old bass is less than one inch longer in total length than the average four year old bass. No two or six year old largemouth bass were collected.

The bluegill, although it is not the most popular fish, may be considered as the most important fish in the lake. This is in view of the fact that the bluegill not only is a source of good sport for fishermen, but seems to be a primary source of forage fish. This in turn helps to support the bass and crappie population. Although there is a considerable number of bluegills in Lake Waccamaw, the number is far from an overpopulation. This is indicated by the excellent reproduction and satisfactory growth found in the collection of bluegills. Scales from fifty-two bluegills were examined and the results are shown in Figure 1. The four year old class was in a slight majority over the other age classes. The age of the bluegills collected varied from very young fish to one large specimen six years old. In one collection two hundred and seventy-four sunfish fry were taken, only about one third of a school actually observed. Sportsmen report that most of the bluegills spawn in a large cove on the northwest side of the lake. This is true, at least to some extent, because many of the bluegills were collected in this area. Also the water in this cove is rather quiet and the sandy bottom is suitable for bluegill spawning.

Scales of the other sunfish such as the redbreast, pumpkinseed, and warmouth, were not examined because of the small number present in collections and because of their unimportance. There is considerable belief by sportsmen that there is a hybrid sunfish in the lake, or two varieties of speckled perch (or pumpkinseed). Particular attention was given to this point, but every fish examined turned out to be *Lepomis gibbosus*. Some hybridization very likely exists but no evidence of an abnormal situation was found.

Lake Waccamaw, although much more productive than the other lakes surveyed, presents a similar problem in fisheries management, namely, that of providing adequate forage. It would be beneficial if some of the undesirable species were removed, but this does not appear to be practical. Lack of forage is evident because of a definite growth decrease in most game predator species after the third year. In other words there does not seem to be sufficient food for the large game fish such as crappie and bass. Minnows were present in a number of collections and contribute forage to a certain extent. Gizzard shad are good forage but only one very large specimen was collected. It is reported by sportsmen that young shad are occasionally taken when seining for minnows. The available forage supplied by minnows and shad can be accurately determined only by a food habits investigation, but it is believed that these species supply only a small part of the fish food. Bowfin and gar were not taken often but sportsmen feel that they are present in considerable numbers.

No small suckers were collected and only one large one. This specimen measured 12½ inches. The lack of small suckers may be accounted for by the presence of predator fishes in the lake. This is quite different from the abundance of suckers found in most of the other lakes surveyed. An interesting situation regarding darters was found in Lake Waccamaw as well as in most of the other lakes surveyed. Small darters were collected in practically all samples taken with rotenone, even in the deepest water where the bottom is a fine black muck. (Continued on page 17.)

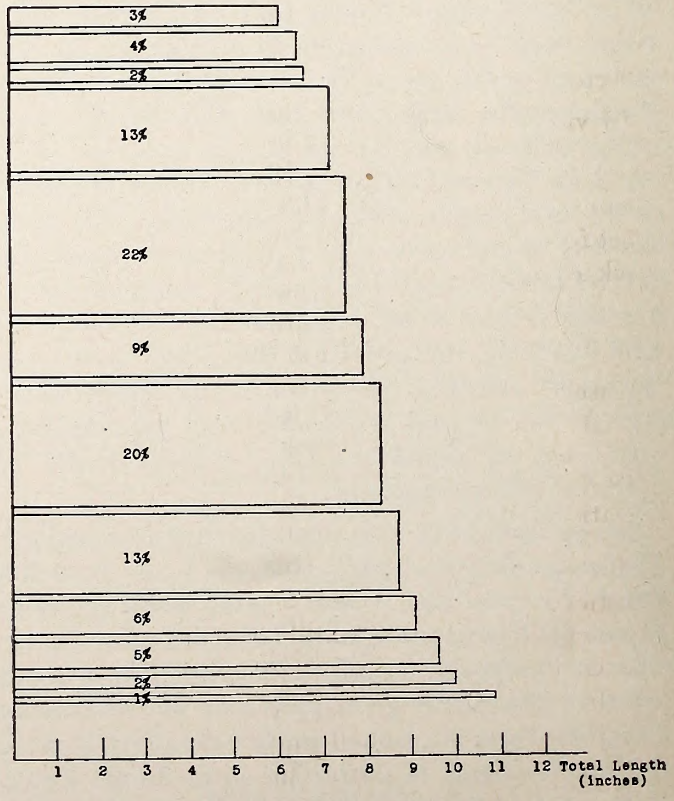


Figure 2. Average total length of 92 white perch caught by fishermen from Lake Waccamaw. Verticle scale represents percentage of catch in each size group.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

THE N. C. WILDLIFE RESOURCES COMMISSION NOW HAS TEN GAME RESTORATION PROJECTS UNDER WAY WHICH USE FEDERAL AID FUNDS FOR WILDLIFE MANAGEMENT WORK. A TOTAL OF $149,090.47 HAS BEEN ALLOTTED BY THE FEDERAL GOVERNMENT FOR USE IN THIS STATE DURING THE CURRENT FISCAL YEAR.

WILDLIFE MANAGEMENT IN NORTH CAROLINA IS A MILLION DOLLAR BUSINESS. A BUDGET OF $1,213,203.70 HAS BEEN APPROVED FOR EXPENDITURE DURING THE 1948-1949 FISCAL YEAR. LAW ENFORCEMENT IS THE BIGGEST ITEM ON THE BUDGET WITH SLIGHTLY MORE THAN ONE-THIRD OF THE TOTAL BUDGET GOING FOR LAW ENFORCEMENT. AN EXPANDED EDUCATION BUDGET CALLS FOR THE EXPENDITURE OF NEARLY $40,000.

THE TABLE ROCK FISH HATCHERY NEAR MORGANTON IS NOW IN OPERATION AND WILL SOON BE PRODUCING FISH FOR TARHEELIA LAKES AND STREAMS.

PLANS ARE BEING LAID FOR A MOURNING DOVE SURVEY PROJECT TO BE CARRIED ON IN NORTH CAROLINA IN COOPERATION WITH OTHER SOUTHEASTERN STATES. THE SURVEY WILL BE DESIGNED TO OBTAIN MUCH-NEEDED INFORMATION FOR DOVE MANAGEMENT ON A REGIONAL BASIS.

A CRACK-DOWN ON ILLEGAL DEER HUNTING HAS BEEN GOING ON FOR SEVERAL WEEKS WITH A NUMBER OF COURT CONVICTIONS AS A RESULT. ILLICIT DEER HUNTERS HAVE BEEN GIVEN HEAVY FINES AND COURT COSTS AND HAVE HAD THEIR GUNS CONFISCATED BY COURT ACTION. THE LAW ENFORCEMENT DIVISION HAS BEEN GIVING SPECIAL ATTENTION TO NIGHT-TIME JACK-LIGHT HUNTERS.

THE EMPLOYEES TRAINING CONFERENCES BEING HELD IN COMMISSION DISTRICTS ARE CONSIDERED TO BE HIGHLY SUCCESSFUL FROM EVERY STANDPOINT. FIELD EMPLOYEES ARE GIVEN AN OPPORTUNITY TO DISCUSS ADMINISTRATIONAL PROBLEMS WITH THE ADMINISTRATIONAL STAFF WITH RESULTANT CLOSER COORDINATION WITHIN THE WILDLIFE DEPARTMENT.

GAME LAW VIOLATORS MAY SOON HAVE TO CONTEND WITH A PATROL PLANE AND TWO-WAY SHORTWAVE RADIOS. THE WILDLIFE RESOURCES COMMISSION IS LAYING PLANS TO TEST THE EFFECTIVENESS OF A RADIO-EQUIPPED PATROL PLANE AND PORTABLE GROUND SETS IN APPREHENDING ILLICIT HUNTERS AND FISHERMEN. THE AIRBORNE RADIO SET WILL FACILITATE DIRECTION OF PATROL CARS TO SCENE OF ILLEGAL HUNTING AND FISHING OPERATIONS.

WE ARE STILL GROWING. THE CURRENT ISSUE OF "WILDLIFE IN NORTH CAROLINA" REACHES THE 10,000 MARK, 400 PER CENT OF THE JANUARY 1948 ISSUE. THE MAGAZINE GOES ON A MONTHLY SCHEDULE WITH THIS ISSUE.

NORTH CAROLINA GAME PROTECTORS HAVE BEEN ASSURED OF FULL COOPERATION OF THE FEDERAL BUREAU OF INVESTIGATION. LABORATORY FACILITIES OF THE FBI ARE AVAILABLE FOR BALLISTICS WORK, FINGER PRINTING, AND OTHER TECHNICAL PROCEDURES WHICH AID IN DETECTING AND PROSECUTING FISH AND GAME LAW VIOLATORS.

THE NORTH CAROLINA WILDLIFE FEDERATION HAS ANNOUNCED ITS ANNUAL MEETING TO BE HELD IN WINSTON-SALEM ON OCTOBER 11 AND 12. A HIGHLIGHT OF THE MEET WILL BE A BARBECUE SUPPER OCTOBER 11. THE MEETINGS WILL BE OPENED TO THE PUBLIC, AND ALL SPORTSMEN ARE URGED TO ATTEND.

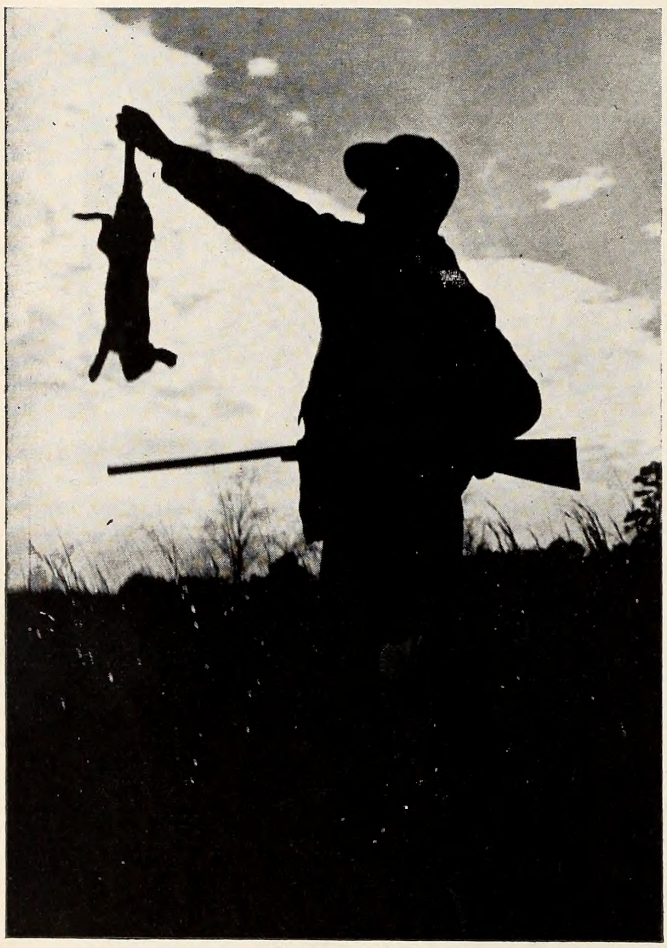
THE 1948-1949 COMBINATION HUNTING AND FISHING LICENSES ARE NOW ON SALE AT LICENSE DEALERS THROUGHOUT THE STATE.

SIMPLICITY — THE RULE FOR BETTER OUTDOOR PICTURES

By JACK DERMID

Photos by The Author

Once the sportsman has mastered a few of the basic fundamentals of photography, he will find that it is just as easy to take good pictures of his hunting and fishing activities as it is to take bad ones. It is nothing more than folly to continue to carry a camera about and waste money on film when the results are not worth the effort. So resolve now to give the problem of picture taking a little thought, and learn to bring back good photos, photos that tell the story of your happy days in the field.



By using a red filter and panchromatic film, effective silhouettes can be made easily if you shoot against the light.

Before discussing the more important principles involved, let us assume that you are thoroughly familiar with the tools you intend using. The lens opening and shutter speed dials, the view finder, and other parts of your camera are designed to aid you, not to cause confusion or bewilderment. It is definitely worth while to learn their purposes. In addition, you will find it to your advantage to follow the manufacturer's directions enclosed with each package of film, especially if you do not own an exposure meter. With their aid and a little experience, you will find it easy to expose your film correctly nearly every time under ordinary lighting conditions. The operation of your camera and the judging of the proper exposure should both become an automatic procedure for you so that when the time comes to snap the shutter, you will not have to fuss and fume over incidentals, but can give most of your attention to the subject, which, after all, is the most important thing.

It does not necessarily follow that you must have an unusual subject for a snapshot to be a success. On the contrary, it is not what you take a picture of that counts, but it is how you take it. Thus, it is up to you whether or not your photos are worth a second glance. You have probably heard time and time again that simplicity is the artist's key to success. If you will remember this time-tested principle the next time you aim your lens, the chances are that you will obtain better pictures than ever before. But how can we apply this conception to photography?

First of all, consider the photograph as a whole. To be effective, it must be simple; that is, it must contain only one dominant subject and present only one central idea. The chief point of interest in the picture should be clearly visible to the observer without competing with other unrelated objects or persons for attention.

In other words, take one picture at a time. Instead of photographing Uncle John and his prize rainbow trout, the family car, a view of the stream, blooming rhododendron, and a group of inquisitive youngsters all on the same negative, snap each one separately. Maybe it's only Uncle John and his trophy that you want to record. Then, get him off to one side; have him measure the fish for you in a natural manner against a pleasing background, and you will get a picture worth keeping. Truly, Uncle John and his trout offer many good picture possibilities, but remember the principle of simplicity for best results.

A photograph consists of essentially three parts: the foreground, the subject, and the background. Each of these parts must fit together in the proper proportions if a desirable effect is achieved, and each part bears a definite relationship to the others. The purpose of the foreground is to lead the eye unconsciously into the picture, where it is attracted by the center of interest, and it should be held there if the background is not distracting and blends pleasingly with the whole. Thus it can be seen that the conception of simplicity applies not only to the chief element of the photograph, but is of similar importance to both the foreground and the background.

For third dimension effect, frame your scenic views between two trees, in the arch of a bridge, or by some similar device.

It is not difficult to control the foregrounds of your snapshots, for they usually, or should at least, occupy only a minor portion of the majority of pictures. Many photos have been ruined because too much foreground has been included in them. All you have to do to keep your favorite dog from appearing as if he is in the ajoining field in the finished print is to move the camera in closer before tripping the shutter. By changing your point of view, you can usually avoid other conspicuous foreground errors. For example, a step to one side can prevent the photographer's shadow from falling into the picture. If you will take a few seconds to pick up scraps of paper or eliminate distracting objects, such as bottles, cans, and old tires that may happen to be in the foreground, you will find that it is well worth the effort. You have probably seen a number of snapshots from time to time with unsightly blurs in the foreground or in front of the center of interest. Weed tops, limbs, and automobile fenders are sometimes the cause of this difficulty if they are too near the camera to be in focus. Watch out for them.

The old saying that "beggars can't be choosers" often holds true for photographers when the background of a picture is concerned. The choice of a suitable background is a problem that must always be faced and one not always easily solved. In general, there is no set rule for selecting a suitable background, but you cannot be very wrong if you let the principle of simplicity be your guide. The background should be a subordinated part of the picture. In a sense, it is a frame about the center of interest, and consequently it should be appropriate. For example, if a black bear is photographed against the deep shadows of the forest, it will hardly be seen in the resulting picture, for the background and subject would blend almost perfectly together. It would be better to snap bruin in front of a light-colored granite outcrop. Again, it would be folly to shoot a string of silver fish against the side of a white building.

One of the first things you should learn to do is to look beyond your subject, for the camera will surely record what is there. The background is often the decisive factor in determining whether a picture is good or bad. Even if you cannot find ideal backgrounds for your snapshots, it is worth while to avoid the most distracting ones. Have you ever seen a tree or a sign sprout from a person's head? Well, that is a common fault in many photos that could be easily prevented. Open foliage against the sky makes an ugly background of contrasting black and white in a photograph, and definite lines made by clapboards or bricks are often equally distasteful. But probably the worst background of all is one cluttered up with many conspicuous and unrelated objects, such as a filling station with its array of gasoline pumps, signs, automobiles, beverage crates, and idle bystanders.

Now that we have seen how important it is to keep our pictures simple, let us give more attention to the subject. If you are photographing people, let them live! Don't shout attention before you click the shutter! Too many outdoor pictures turn out to be nothing more than a recording of the self-conscious hunter standing stiffly beside an equally stiff trophy, with the accent on the bags in the hunter's trousers. You have seen dozens of pictures like that, and the chances are that you are tired of seeing them; so quit bringing them back. Wouldn't it be better to snap Uncle John photographing his own buck, skinning it, or just admiring it? Let him be doing something. At any rate, keep him from staring blankly toward the lens and persuade him to relax. The camera won't bite.

It is not necessary to capture fast action in order to give your pictures life. In fact, you cannot do it anyway unless your camera is equipped with very fast shutter speeds. Then, it's no crime to pose action shots, and if you are careful, they will not appear in the least artificial. No matter what type of action picture you plan to make, it is a good idea to have

Don't include half of the county in your dog shots. Move in close and keep your pictures simple for good results.

your subject practice his part several times before the exposure. In this way, you can study his motions and have him pose in the one most likely to result in a good picture. Besides, practice will help your subject overcome camera consciousness.

Again, you can give your pictures life without action. The spontaneous grin of a youngster holding up his first large fish or Grandpa sleeping against the trunk of a tree with a cane pole in his hand are both subjects full of life.

It is often more difficult to photograph a group of people in a natural way than just one. Maybe you want a picture of Bill, Tom, and Joe and their catch of largemouths. Instead of lining them up like a squad of soldiers at attention, why not let Bill and Tom compare the two largest fish, while Joe looks on. You will be more satisfied with the results that way. And you can easily think of other combinations that will be even better.

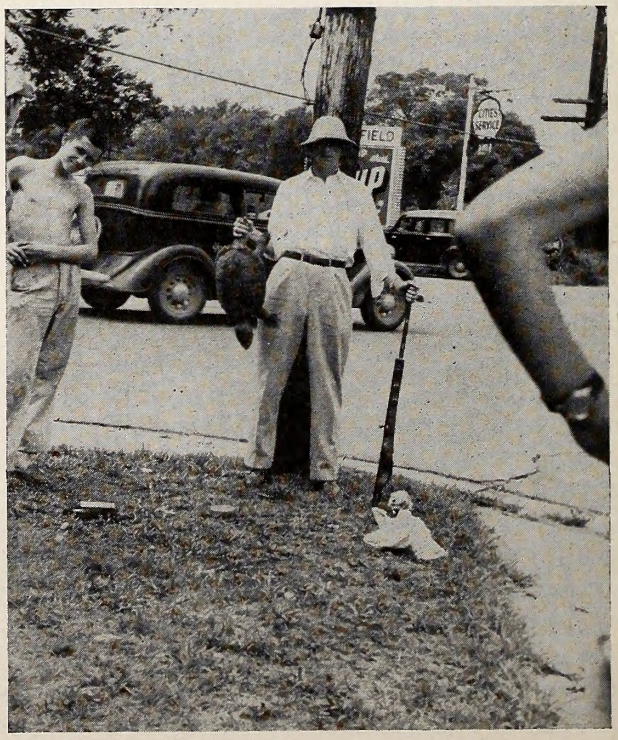
At the same time, let your pictures tell a story. Make them interesting. A closeup of an angler's hands removing a battered plug from the mouth of a bass suggests far more than is actually revealed. It makes you think of the thrilling struggle that occurred a few minutes earlier, and you can easily visualize the expression of satisfaction on the angler's face. A picture like that will "live" forever! An early morning shot of a duck hunter putting out his decoys tells another story, or of a gunner taking a bobwhite quail from a setter's mouth. In regard to story telling, you will find it fun to record your entire outing with a series of photos, and months or years later it will help you to relive every exciting incident. A good way to begin is to snap a picture of your companions loading the car with the party's gear. Let's say you are going trout fishing. Then, follow the first shot up with one of Bill struggling to put on his waders, one of Tom netting the first fish, and with as many more pictures as necessary to show the group's many activities. You might end the series with a photo of Joe frying the catch over an open fire. By all means, don't forget to include a few scenic shots of the countryside in your series, for that trout stream will look good to you on a winter evening.

In the taking of landscape pictures, simplicity is again the rule. It is better to concentrate on one area at a time than to attempt to crowd Mount Pisgah, Looking Glass Falls, and the Davidson River into one photo. Try to balance the light and dark areas of the scene in an agreeable manner and to arrange all lines so that they lead to the center of interest. With the aid of a yellow filter you can capture the beauty of cloud formations, which will otherwise be lost. A sense of depth, or third dimension, can be achieved by framing the picture between two trees, under the arch of a bridge, or by some other device. If you include figures in your scenic shots, be sure that they look away from the camera.

A whole book could be written about the sun as a source of light for taking pictures. However, the generally accepted rule of keeping the sun to your back is a good one to follow at first. With experience, you will soon learn to modify it according to the circumstances or to the picture desired. It should be pointed out that the worst time to expose film is during the middle of the day, especially if people are the subject. Then, the sun is almost directly overhead and is very bright. As a result, harsh shadows are cast beneath the eyes, nose, and chin, giving your model a gruesome appearance. And if he is wearing a hat, his whole face will probably be obscured. Wait until the sun is at an angle overhead for better pictures! In addition, the sun does not have to shine with full intensity for you to use a camera. A bright, hazy day often gives the best results, since deep shadows are not present. And don't allow cloudy days to be discouraging. If you have a fast lens, merely open it wider, or if you have a box camera, use a faster film.

Taking pictures is a lot of fun, but it is even more fun if good results are obtained. And good results can be obtained if you give the problem of picture making a little thought. Remember that the principle of simplicity is the guide to success. Then, if you give your pictures life, make them tell a story, and shoot when the sun is right, you will surely be pleased with the results. So why not take good photos on your next roll of film?

HOW NOT TO TAKE A PHOTO



There are at least 10 conspicuous photographic errrors in this trophy picture. Can you spot them? Turn to page 19 for summary.

Federation Has New President — Heath Resigns

D. Staton Inscoe

One of the results of the meeting of the officers and board of directors of the North Carolina Wildlife Federation held in Raleigh, July 29, 1948, was the resignation of Mr. Forrest G. Heath, from the presidency of that organization, with Mr. D. Staton Inscoe, Postmaster of Raleigh and director of the organization since its inception, being named as the new president.

When asked for a comment, President Inscoe made this significant statement:

"It shall be my purpose, during the remainder of the term to which I have been elected, to promote as much activity as possible in the individual wildlife clubs of North Carolina with the view of increasing membership, building strong clubs and inviting all sportsmen, hunters and fishermen of North Carolina to participate with us in increasing the sphere of influence of the North Carolina Wildlife Federation.

"We are receiving and will receive the assistance and coöperation of the North Carolina Wildlife Resources Commission in promoting and broadening our activities.

"I solicit the full coöperation of every sportsman, every hunter and every fisherman in North Carolina to join with us in doing those things that will bring about better hunting and fishing, more healthful recreation and the conservation and protection of our game and fish resources.

"I earnestly request each wildlife club to schedule early meetings with the assurance that the State office will render every assistance by providing them with speakers and helping to plan their programs."

Ex-president Forrest G. Heath, widely known throughout the south for his active and interested participation in collegiate athletics, has submitted his resignation from the presidency of the North Carolina Wildlife Federation and made the following statement:

"Due to an emergency existing at the time, I accepted the presidency of the Federation until the April meeting. It seemed advisable then and for the best good of the Federation, that I continue in that capacity until other arrangements could be made.

"Subsequent events have increased the already heavy pressure on my time and energies until it became of paramount importance that I readjust my schedule.

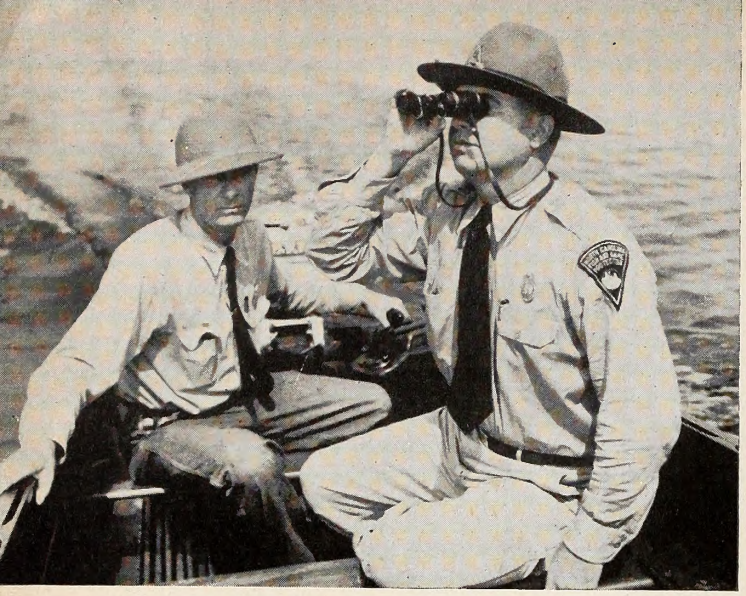
"It is therefore with sincere regret that I report my recent resignation from the presidency of the North Carolina Wildlife Federation and sincerely wish to Mr. Inscoe, who succeeds me, all the success possible and to the Federation and its members an active, interesting and prosperous program, repleat with benefits for all those who are sincerely interested in the wildlife resources of the state.

"You may be assured that my interest and support will not only remain with the Federation but will increase. I shall always be available for any assistance that may be needed."

J. Hammond Bown, president and king-pin of the Outdoor Writers Association of America, is responsible for this salty bit of philosophy:

"Let's get this straight: whenever we write, talk, or think about conservation, let's remember that the word means *wise use*, not prohibition."

Residents of the Columbus County home were treated to a venison dinner recently at a great expense to four Columbus County deer hunters. The pre-season deer shooters each paid a total of $163.10 in fines and court costs for killing a whitetail doe at night with artificial light. The doe was confiscated and turned over to the county home. All in all the dinner cost the errant deer hunters $652.40 and two confiscated shotguns.



1. The day begins at dawn with a check on early morning fishermen.

2. He shows an angler a new way of tying on a bass plug . . .

5. He checks a license dealer's account . . .

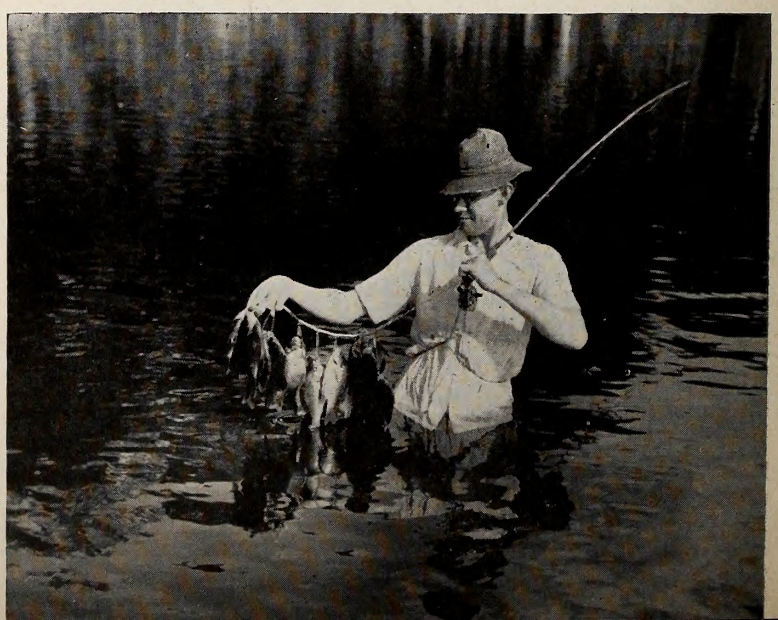
6. . . . and examines some confiscated fish nets.

A DAY IN T
A GAME PI

The men who protect our wildlife s
and fishermen spend many long hour
duty 24 hours a day. To get a story on p
tographer Jack Dermid followed Distri S
his men through a day's activity.

9. . . . looks at the license of a wading fisherman . . .

10. . . . who displays a nice catch of fish.

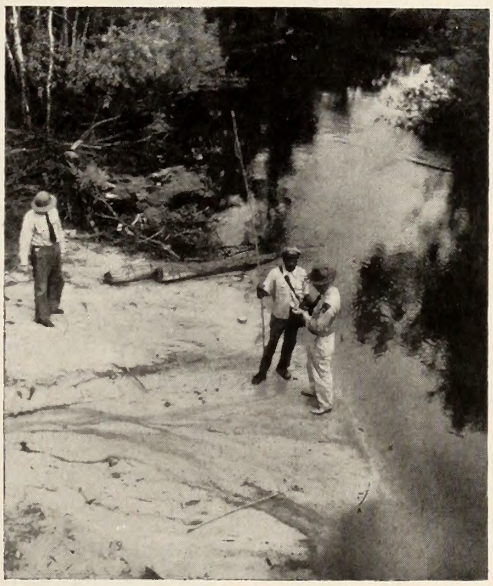


3. . . . finds an angler fishing without a license . . .

4. and brings him into court. (This photo was posed).

IE LIFE OF
OTECTOR

ources from unscrupulous hunters
on the job. They are available for
pical activities, "WILDLIFE's" pho-
Supervisor E. W. Caine and some of



7. In the afternoon he checks more fishermen . . .

8. . . . and examines deer damage to a cornfield . . .

11. He looks for evidence of poisoning in a pond . . .

12. . . . and finally ends the day after a search for night deer hunters.

Good Patterns are Good Conservation

BY WIN DONAT

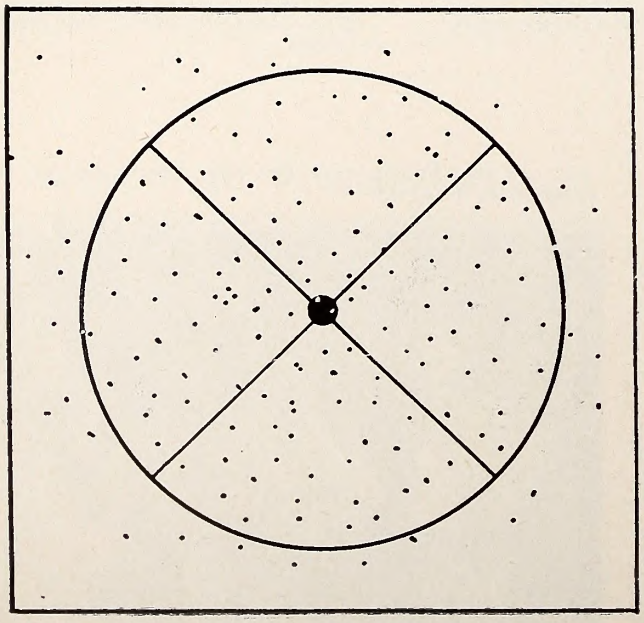
Patterning your favorite scattergun is one of those things often heard and talked about and yet a cross section census of shotgun devotees would show an appalling lack of information about the working efficiency of their favorite "meat getter."

Why is patterning so important? Let's take the word pattern and hold it to the light. Mother has patterns spread all over the place and she is at her busiest when concerned with cutting her cloth to the pattern. Dad too, when he wants to make a new part for the dog carrier on the car, first makes the part, or pattern, of cardboard from which he works the final wood or metal.

So then, the word pattern becomes a guide and a highly accurate indication of the finished product for everyone except the shotgun shooter. For him, the word should mean a "must" duty to be performed when Old Betsey is unlimbered for the fall chores afield.

This duty has its finger pointed squarely at those of us who call ourselves true sportsmen, because of the pure, unadulterated conservation involved. In these days of less game, when a man must exercise his mentality to enjoy the whole out-doors picture and when he must be satisfied with a pleasant and memorable trip coupled with a reduced bag, these conditions will best be met when there are no sour memories of the buck that struggled into the impenetrable marsh leaving a bloody trail, or of the birds that fell, but never were brought to bag.

Saving this game and reducing it to the true sportsman's use is one of the basic tenets of our creed. This is where patterning comes in.



An excellent pattern, with even distribution and a concentration of pellets near center.

No two apparently duplicate shot guns will handle the same of varying makes of shells or loads with the same pattern efficiency. A definition of pattern efficiency could be expressed as the density of shot pellets of the size required to kill at the usual shooting distance. With this in mind, let us cinch the point.

Your pet smoke stick might be a whiz on running deer when using maximum powder loads and "00" buckshot, yet, in a patterning test, it might throw a pattern of No. 6's (maximum load) which will leave large enough unpunctured areas in the paper to make the bird on Nellie's hat relatively safe at thirty yards. The same thing might be true when No. 4 and No. 7½ shot are compared and most certainly holds true when different manufacturers' shells of the same shot size and powder loading are tested. Therefore, it becomes most imperative that you know beyond a doubt, which gun and which type and make of shell will cut down the wasteful losses of valuable game.

The equipment required to pattern the average twelve gauge gun and ammunition consists of a safe area for such firing, a rack for the paper target support and a rest for the gun. The rest serves to provide consistent holds on the target.

Don't unload one shell at the target, take a quick glance at the effect and go home smugly satisfied that all is well and all wildlife should beware come opening day. The more patterns fired under identical conditions, providing the checking is reasonably careful, the truer your gun performance will be pictured for you.

A clean sheet of paper of the brown wrapping type, forty-eight inches wide, is preferable. If the paper is cut into sixty inch lengths and mounted on the rack with the long axis horizontal, a more accurate accounting of the "wild flyers" or deformed pellets, is possible. A pencil circle may be scribed on the paper by drilling a small hole in a yard stick at the one inch mark and another larger hole at the nineteen inch mark.

To find the center of the paper, fold it diagonally through opposite corners and repeat the fold through the remaining pair of corners. Where the folds cross, hold the end of the yard stick, using a nail or pin through the hole at the one inch mark. Through the hole at the nineteen inch mark, insert the point of a pencil and scribe the circle. The center should be marked with a black bull's-eye large enough to be clearly seen at forty yards. Lines drawn along the folds from the center to the circle will divide the area into segments which may be scored separately and a series of shots will, by actual count, indicate the tendency of the gun to concentrate shot.

Forty yards is the usual distance for a thirty inch circle target, but if you kill most of your quail between twenty to thirty-five yards, then adjust the set-up to your own conditions.

All that is left is the mounting of the target on the rack. Remember, tho', that the rack should be rigid and cross-supported enough to keep the relatively flimsy paper from tearing out in a stiff breeze.

All shooting should be done from a rest position that affords the most consistent duplication of conditions. Aim at the center of the bull, squeeze the trigger until Betsy bellers and then go see what happened. Use a soft lead pencil or crayon and count and mark every hole in or on the circle. Record the total in the blank portion outside the circle.

The average number of pellets for the standard loads of popular size buck and bird shot are contained in the following table which should be cut out and kept in your wallet for handy reference:

Size	⅞ oz.	1 oz.	1⅛ oz.	1¼ oz.
00	Buck			12 ga. 9*
0	Buck			12*
1	Buck		16 ga. 12*	16*
4	Buck			27*
2	77	88	99	110
4	119	136	153	170
5	147	168	189	210
6	196	223	251	280
7	259	299	336	373
7½	301	345	388	431
8	357	409	460	511
9	511	585	658	731
10	763	868	977	1085

* Maximum loadings, not necessarily of the weight indicated.

To find the percentage, divide the total pellets within the circle by the total in the load (obtained from the table). For example, a 1¼ ounce maximum load of No. 6 in a twelve gauge gun put 210 pellets in the thirty inch circle at forty yards, hence 210 ÷ 279 = .75% which, by the way, is a red hot duck gun.

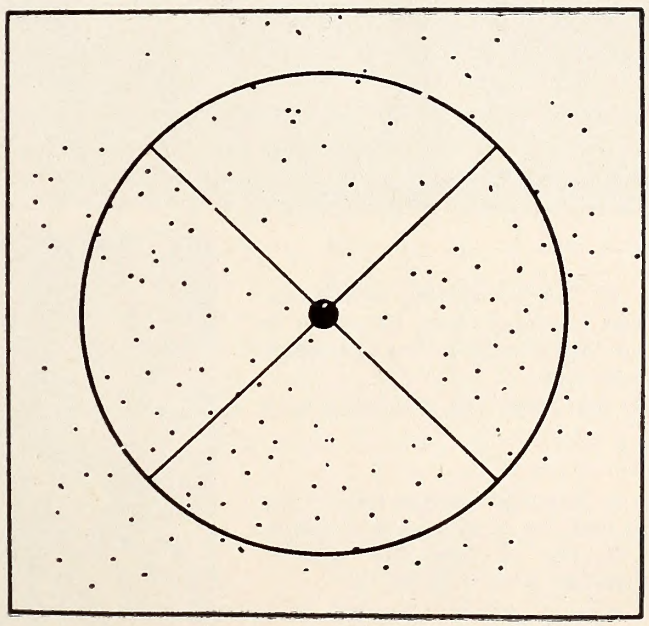
While we are on performance, the following are the generally accepted factory descriptions of choke as expressed in terms of pattern density:

Full choke	70%
Half choke	60%
Quarter choke (modified)	50%
Improved cylinder	40%
Cylinder	30%

It is most necessary to consider general distribution of the shot in the pattern as well as the actual count. Hence, a gun and shell combination which peppers the paper to a seventy-five percent tune and yet has untouched areas the size of a dining car saucer, is a sure bet to be poor risk as a quail gun and the same is true of any similar gun and shell pattern, with possible exception of the buckshot loads which should always have a concentration of hits near the point of aim.

Don't be afraid that your gun will let you down. The chances are that there is some one load that will show up better than others and the obvious thing to do is to use it. If, however, you just can't find the answer, all is not lost. Send the barrel back to the maker or an expert gunsmith, and get him to advise you. It is important, very important, that you clearly describe the work you want the gun to do. Also keep in mind that it is easier to rework the choke out toward cylinder bore than it is to start with an open bore and try to put choke in. The latter is not impossible as the bore can be expanded thereby allowing the shot charge to expand slightly within the tube and the slight constrictive effect between the recess and the muzzle will tend to pack the pellets into a tighter mass.

If all hope is gone and your findings have proved beyond the shadow of a doubt that you as a real sportsman-conservationist have no business using that heretofore beloved pet on quail or any other game, take your courage in both hands and send the stock back to the factory with the request that they fit a new pipe to it. Again, you can't be too clear or specific in stating the work that you want it to do.



"Donut" pattern caused by interference of shot wad. Note poor distribution of pellets near center.

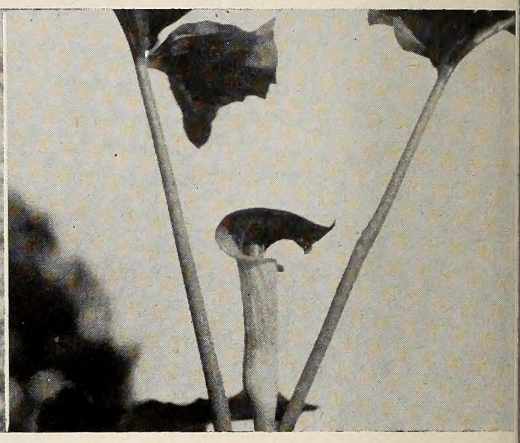
The importance of patterning the gun prior to the beginning of each year's hunting should be a conscientious practice on the part of every one of our conservation minded sportsmen. It pays off both in game and deep down sense of satisfaction that the sportsman's creed of killing clean or missing clean has been lived.

Although small in size, the cottontail rabbit provides more food for the table than any other game species in the United States.

WILDLIFE PHOTO QUIZ

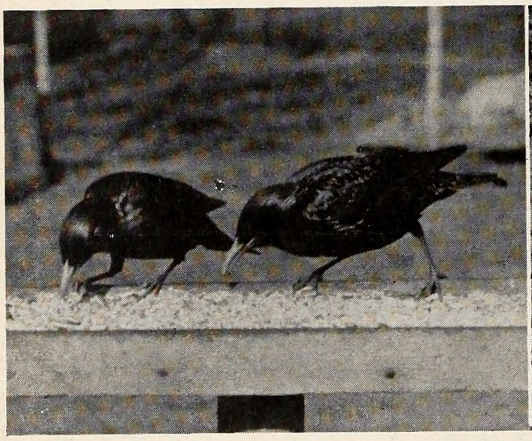
By JACK DERMID

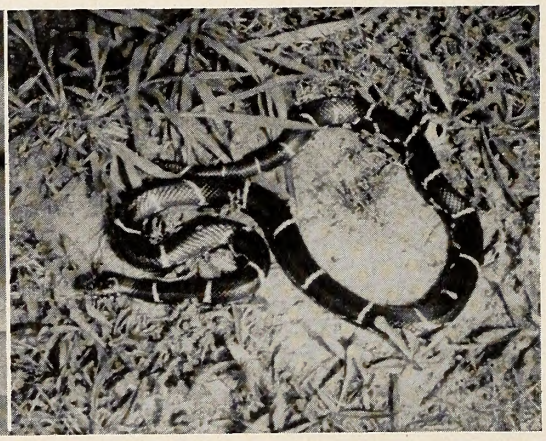
See if you can identify the photos without looking at the clues. Answers on page 19.



1. Although this is a young bird, you should recognize its markings immediately. It is a woodpecker that commonly perches in the manner of other birds.

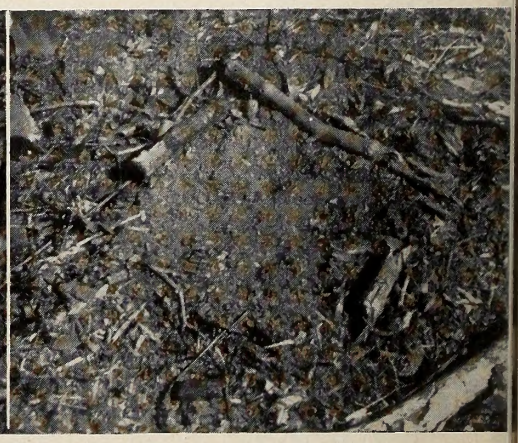
2. This wild flower is frequently mentioned in nature literature. It is found in moist places and its name is_____





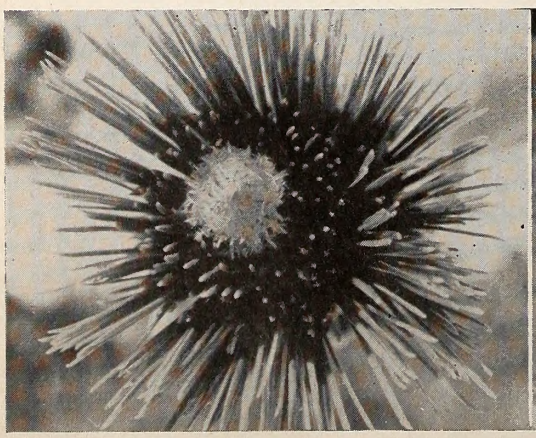
3. These imported rascals are gluttons and pests everywhere. They compete aggressively with many of our more desirable birds. They are_____

4. This snake is a friend of man and can easily whip its weight in rattlesnakes. The golden chain down its back is a clue. Name it.



5. This interesting little mammal is seldom seen becase of its nocturnal habits. You can recognize the_____ by its dense tail and large eyes.

6. You will have to know what to look for in this picture, but an observer of bird life will be familiar with it. Name it.



7. If fire, disease, or man do not interfere, this youngster of the sandhills will develop into a beautiful tree. Can you identify the picture?

8. Everyone should know our state bird. It is very fond of sunflower seeds and readily comes to the feeding tray for them.

FISH RESOURCES

(Continued from Page 6)

Eels are occasionally taken by fishermen and several were collected during the survey. The presence of a spillway helps to control the number of eels as it acts as somewhat of a barrier in their migration. Yellow perch are relatively unimportant as a source of sport for fishermen. Only a few were collected and these were quite small. This is very much in contrast to what was found in some of the other Bay lakes where the yellow perch is the dominant game fish.

Conclusions

Lake Waccamaw is more productive and provides more satisfactory fishing than any of the other lakes surveyed. White perch, black crappie, largemouth bass, and bluegills provide most of the sport for fishermen, the white perch and black crappie being most important. Growth of the black crappie is most rapid during the first three years, after which the rate decreases. The species appears to be increasing in numbers. Largemouth bass show very little growth after the fourth year. White perch have grown fairly consistently as shown by specimens ranging from three to six years old. Bluegills show excellent reproduction and satisfactory growth. There is not sufficient food for satisfactory growth of the desirable predator species.

White Lake

As the name suggests, the water in White Lake is almost colorless and, consequently, those who enjoy boating and swimming find it very attractive. Also, White Lake has a large area of shallow water with a coarse sand bottom which is very desirable for swimming. Although the persons who participate in boating and swimming greatly outnumber the fishermen, a considerable amount of fishing is done. Most fish are caught in early spring during March and April and on moonlight nights during the summer.

The boating and swimming activities, especially during week-ends, were found to have had an undesirable effect on spawning of fish in at least one instance. During the last week of July approximately 20 redds were made in the shallow water on the northeast side of the lake. The majority of these redds were constructed by redbreast sunfish, and it is believed that all were. All redds except four were located at the end of small piers or boathouses, indicating somewhat of a preference for cover in that particular situation. Within a few days after construction, practically all redds were destroyed by swimmers and boaters. Whereas this incident is not sufficient evidence from which to draw definite conclusions, it is reasonable to believe that at least some undesirable effects can be caused by the activity of swimming and boating fans.

The fish population in White Lake presents a very definite problem in fisheries management in that there is almost a complete absence of forage fish. See Table 1 for a list of the fish found in this lake.

A number of parasitized fish were collected from White Lake, and although no serious effects were noted, some effect of minor consequence undoubtedly occurs. Some of the fish were infested with common fish lice (Argulus versicolor). However, the most abundant parasites were Nematodes found in the body cavity. This was especially true in the yellow bullheads.

The three most abundant species of fish in White Lake are the yellow perch, yellow bullheads, and largemouth bass. The large number of yellow bullheads was indicated in a majority of the samples. Trot lines and other fish samples invariably caught a large percentage of bullheads. On one occasion a 12 foot gill net contained nine bullheads after being set for one night.

The sucker population is apparently low in comparison to the other species. Small suckers were found in one collection and very few adults were taken.

The largemouth bass and yellow perch provide almost all of the sport for fisherman, and although the yellow perch population is greater than the bass, more bass are caught. The reason for this seems to be that bass are caught by ordinary methods of fishing, whereas the larger yellow perch are taken chiefly by trolling, the technique being unfamiliar to many fishermen.

When a lake is poor in production of fish food, the growth of the fish in that lake can be expected to be slow. This was found to be true in White Lake. Scales were examined from 22 bass. It was noted that the 4-year age class occurred most frequently in bass over ten inches in length. This age class contains the majority of the fish taken by fishermen as it includes the 11 to 14 inch bass.

Since there is such a shortage of small fish, except yellow perch, an analysis of 22 bass stomachs was made in an effort to obtain some information on the food of the bass. The stomachs were taken from bass varying from 2½ to 14 inches in total length. The stomach analyses showed that 52% of the total number of organisms consumed consisted of small darters (Boleosoma sp.), the remainder being small sunfish, catfish, madtoms, and crustacea. Obviously, the bass have difficulty in getting an ample supply of food when they are forced to feed on darters. It was also noted that the stomachs of bass over 11 inches in length contained very little or nothing. Since a number of large schools of 2 to 3 inch yellow perch was observed, it was believed that the bass were feeding on these small perch, although not one was found in the stomachs examined.

It was reported by fishermen that occasionally small yellow perch are found in the stomachs of the adult perch. Most of the large yellow perch are found in the deep water, and consequently, they are difficult to collect.

The growth of yellow perch was studied from the

Table 1 Distribution of Fish in Bay Lakes

Species	Waccamaw	White	Singletary	Jones	Salters	Black
Lepisosteus osseus—long-nosed gar	X					
Amia calva—bowfin, blackfish	X	X				
Dorosoma cepedianum—gizzard shad	X					
Anguilla bostoniensis—eel	X	X				
Erimyzon sp.—sucker	X	X	X	X	X	X
Menidia extensa—glass minnow	X					
Notemigonus crysoleucus—shiner, roach	X					
Notropis sp.—minnow, shiner	X		X			
Ameiurus natalis erebennus—yellow bullhead		X	X	X	X	X
Ictalurus catus—white catfish	X					
Schilbeodes sp—madtom	X	X	X	X	X	X
Esox americanus—redfin pike, pickerel		X	X	X	X	X
Esox niger—jack, chain pickerel	X	X	X	X		
Fundulus dispar—top minnow, starhead minnow		X		X	X	
Gambusia affinis—top minnow	X	X	X	X	X	X
Aphredoderus sayanus—pirate perch						X
Boleosoma sp.—darter	X	X	X	X	X	
Perca flavescens—yellow perch, redfin	X	X	X	X	X	X
Centrarchus macropterus—flier			X	X	X	X
Chaenobryttus gulosus—warmouth	X	X	X	X	X	X
Enneacanthus gloriosus—blue-spotted sunfish	X	X	X	X	X	X
Lepomis auritus—robin, redbreast	X	X				
Lepomis gibbosus—pumpkinseed, speckled perch	X					
Lepomis macrochirus—bluegill, brim	X	X				
Micropterus salmoides—largemouth black bass	X	X		X	X	
Pomoxis nigro-maculatus—black crappie	X					
Morone americana—white perch	X					

examination of scales from 29 fish. The growth over a period of 5 years follows generally that of the bass, except that it is consistently less.

White Lake, with its clear water and lack of cover, is a rather difficult lake to fish. Observations of some of the fish in the lake and of the good fishing areas revealed that location of good fishing means the location of cover. There are about 3 or 4 places in the lake where fish, mainly bass, are caught fairly regularly, and an examination of these areas indicated that in each case there was relatively heavy cover. One fisherman has gone so far as to tow a fallen tree to deep water and anchor in it order to provide a special fishing spot, with the result above average bass fishing.

A plan of management for White Lake should include two features primarily. One should be that of increasing the forage and the other that of addition of brush shelters to increase the harvest of fish. Providing adequate forage fish is extemely difficult in White Lake because of its low productivity. Fertilization would not be practical because of the size of the lake and because of the attraction it offers to boating and swimming enthusiasts who enjoy clear water.

Brush shelters along the northwest side would be helpful in increasing the catch. However, this should be done in such a way that it would not interfere with boating.

In summary, White Lake is poor fishing. The growth of bass and yellow perch is very slow. Practically no small fish suitable for forage were found. To improve fishing sufficient forage should be provided. Low productivity of the lake makes this exceedingly difficult. The greatest attraction that White Lake offers is swimming and boating. Since this type of recreation is enjoyed by so many more people than those who fish, the fishing should not be given priority in a management plan for recreation. Construction of brush shelters on the northwest side would help the fishermen catch more fish, chiefly bass.

Singletary, Jones, Salters, and Black Lakes

The remaining 4 lakes, Singletary, Jones, Salters, and Black, may be considered as a group primarily because of their general similarities. This is particularly true regarding the fish population, with some exceptions, of course.

Fishing in these lakes is much poorer than in either White Lake or Lake Waccamaw. The reason for this poor fishing seems to be the result of several factors. The fish population is undersirable because of the species present, as well as their relative abundance. Along with this the shallowness, dark color, and

acidity of the water form a very undesirable situation from the standpoint of fish production.

Of these lakes, Jones and Singletary provide some sport in fishing for yellow perch, but this type of fishing is not familiar to many fishermen, and consequently is not a great attraction. Singletary apparently is the richest of these 4 lakes and provides the best yellow perch fishing. There is a small minnow (Notropis sp.) that is fairly common in the canal leading to the spillway of Singletary Lake and is also found occasionally elsewhere in weed patches. If this minnow were abundant, the forage situation would be improved, but apparently the pressure of predator species and other factors keep it reduced.

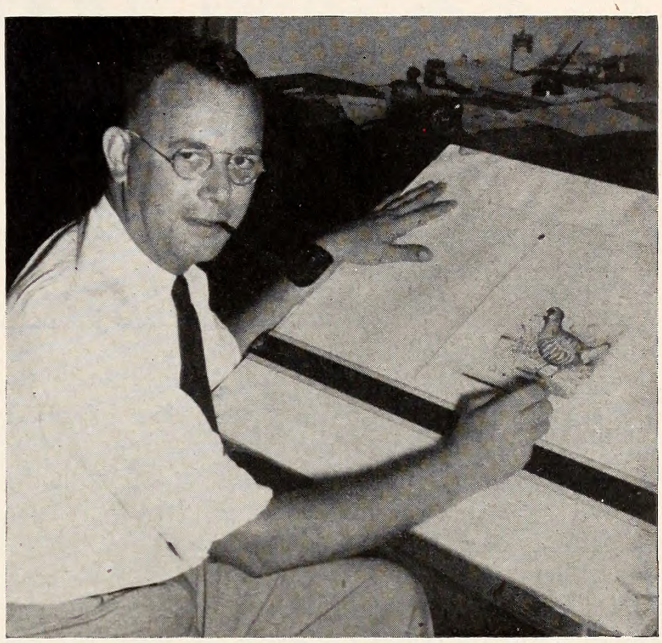
Black Lake offers an exception to the other 3 lakes regarding species of fish present. In this lake no darters were collected. This is in contrast to all the other lakes in that each has a large population of small darters.

Salters Lake was believed by several local fishermen to contain many excellent fish. This lake has been closed to fishing for a number of years and so far as is known, no fish have ever been stocked in it. Salters Lake then should be in an almost natural condition. The survey showed that this lake is as poor as any of the group and very likely the poorest. In an attempt to collect a sufficient number of specimens of fish, as many as 35 gill nets were set. A day's catch from these nets averaged about 10 fish, about 65% suckers and the remainder mostly yellow bullheads.

A summary of the species present in each of these 4 lakes is given in Table 1. The blue spotted sunfish (*Enneacanthus gloriosus*) is the most abundant sunfish in these lakes. This little fish reaches a maximum length of only 3 inches, so its presence is not of much advantage other than possibly as a small supply of food for other fish. Management of these lakes for better fishing does not seem possible from a practical standpoint. In other words, it is felt that no plan involving a reasonable amount of effort and expense would improve fishing substantially. Possibly some of the minnows that occur in Singletary Lake could be transferred to the other lakes in an attempt to build up the forage. This would have to be accompanied by the construction of brush shelters to provide cover, but this would probably be insufficient to provide justifiable results.

In conclusion it can be stated that Lake Singletary, Jones, Black, and Salters are not suitable for practical management because of undersirable fish population, shallow depth, dark color, and high acidity of the water. Salters and Black Lakes are the most unproductive lakes of the group. In view of the undersirable conditions along with the lack of possibilities for improvement in fishing, it would not be practical to attempt an extensive management plan. The results could not be expected to justify the cost of management of these lakes.

New Education Division Assistant



Win Donat

The Wildlife Resources Commission's expanding conservation-education program has received an important addition with the employment of Win Donat as an artist and public relations specialist. Donat has a talent for creating paintings and drawings of birds and animals which look like they are ready to walk, fly, or swim off the page.

A native of Pennsylvania, Donat has been living in Virginia where he has been active in sportsman's club work and has contributed an abundance of art work to *Virginia Wildlife* magazine. The picture above shows Win working on the drawing which is featured on this month's cover.

Win's favorite sport is wildfowl hunting, as evidenced by the fact that he owns one of the top retrievers on the east coast, a Chesapeake named Chessie. He has purchased a home in Raleigh where he resides with Mrs. Donat, three lively children, and Chessie.

SUMMARY OF PHOTO ERRORS

1. Too much foreground. 2. A cluttered foreground. 3. The unfocused blur of a person's arm before the subject. 4. The "look at me" pose of the subject. 5. Shadow of hat obscures subject's face. 6. A telephone pole sprouts from the subject's head. 7. The background is confused and distracting. 8. Subject is poorly framed in picture. 9. An idle bystander hogs the camera. 10. Camera was tilted, giving subject a leaning appearance. (In case you are wondering, this picture was deliberately posed).

ANSWERS TO PHOTO QUIZ

1. Flicker, or Yellow Hammer. 2. Jack-in-the-pulpit. 3. Starlings. 4. King snake. 5. Flying squirrel. 6. Dusting place for birds. 7. Longleaf pine bud. 8. Cardinal.

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

We believe that many of the cracker barrel debates that you fellows have on sporting subjects never would result in actual bloodshed, but — if they are not private affairs, how about letting us in on them? We are interested in the things that interest you. Furthermore, we can assure you that many others of our sportsmen friends all over the state would like to read this page and we hope that they would like to contribute to it. So, write up the old hot potato and dump it on the desk in the form of a short, precise question and we will stick our necks out a yard by trying to give you a fair answer. In short, this is your page, we are only the janitors, so make it as interesting as you can and let's have a real peppy session in the next issue. All letters must be received by the twentieth of the month which makes it forty days before issue.

Q: From Eugene F. Brown, Jr., Box 4255, N. C. State College, Raleigh, we have the question: "While in the field without a dog, I have noticed that Bobwhite quail will run along the ground for a distance of ten to twelve feet before rising. Could you tell me the reason for this?"

A: In nesting season or when young are on the ground, quail will often feign injury in an attempt to lead an intruder away from the brood. As you say you have seen quail on the ground and that they ran some distance before taking wing, it is possible that they were merely "putting distance" between danger and themselves before being exposed.

Q: Jackie Proescher, Cary, N. C., is concerned with large and smallmouth bass. He writes: "I would like to know the difference between a largemouth bass and a smallmouth bass. Is there any difference between them except their mouth?"

A: There are several differences between the large and smallmouth bass other than the size of the mouth. In the largemouth, the corner of the mouth usually extends beyond a vertical line drawn through the center of the eye and the smallmouth usually comes to this line. In the larger sized fish, the largemouth tends to get chunky and pot bellied while the smallmouth tends to retain trimmer lines. The largemouth dorsal fin has a deeper notch than the smallmouth and he usually has seven or eight lengthwise rows of scales above the lateral line while the smallmouth has 10 or 11.

Q: Paul Schmidt, 512 Belmont Avenue, Chicago 14, Illinois, writes: "Why is it that game fish like muskies, black bass, pike etc., do not grow as large in lakes that have not been fished or lightly fished, as the fish caught in well known lakes which are constantly fished?"

A: It is conceded that most game fish are cannibalistic in their diets and the problem involved in your question seems to be one of over supply of fish and food shortage with a possibility of unfavorable natural living conditions entering in to some extent, and while some of the young of each species survive, the probable answer to stunted growth accompanied by poor condition indicates that there just isn't enough food for the development of a pond full of record breakers.

Q. This is an interesting question from John E. Lear, 1812 Park Drive, Raleigh: "When I was a child my father used to hunt a little bird called 'sora' generally in the fall. At the first frost they disappeared overnight . . . Where did they go so suddenly and why all at once?"

A: The sora is still a much hunted marsh bird belonging to the rail family. It visits the brackish and fresh water tidal marshes of eastern Virginia and North Carolina late in August, just after the wild rice and other early ripened seeds are available. The sora suffered terrific decimation as recently as twenty years ago when they were hunted for the market. Men in boats paddled the marsh at night when the tide was high. The birds were drawn to the bright kerosene lamps carried in the boat and were killed by the paddles in the hands of the boatmen.

There is not too much known of the summer habits of the sora an as they migrate at night, they are seldom seen by the casual observer. It is true that the marsh will be almost bare of birds the morning of the first heavy frost.

High Point, North Carolina.

Dear Sir:

I have just received and read my July issue of WILDLIFE in North Carolina and desire to express my appreciation of this excellent issue. This issue and the preceding one have set a new high standard for this publication which I hope can be maintained.

In particular I feel that the report this month on Lake Waccamaw and the report last month on the Bay Lakes are very valuable and the sort of material which this publication could well emphasize.

It is also gratifying to find articles of the caliber of the one relating to farm fish ponds, in which factual material is given rather than the generalized writing that so often characterizes such topics.

The past two issues, in particular, have been excellent reading, and, when finished, leave the gratifying sensation of having added to the reader's store of facts. For instance, I was amazed to read that lespedeza sericea seed are not digestible by quail. I had presumed that they constituted an important source of quail forage, and was under the impression that I had found sericea seed in the crop of several quail. Apparently, I mistook the seed for that of some other native legume. I would therefore be interested in having my ideas about quail food corrected at some future time in NORTH CAROLINA WILDLIFE by the publication of adequate and factual findings of actual crop analyses.

To demonstrate the difficulty which your publication has in pleasing all of the persons who should be interested in reading it, I might cite the one statement in the last issue which did not sit well with me. In the article on farm fish ponds, on page 18, the statement is made that cattails, bulrush, needlerush, etc. should not be permitted in a farm pond. My personal interest is primarily in native plants and wild birds, and I feel that any farmer in North Carolina who builds a pond and keeps it so closely trimmed that red-winged black-birds have no bushes or cattails in which to nest, is missing a substantial part of the recreational and esthetic value of his project. In addition to the interesting native marsh plants which will grow about the narrow margin of a pond, they provide cover for red-winged black-birds, marsh wrens, least bittern, sora, and black rails, to say nothing of bull frogs, water snakes, etc.

Having wandered considerably in my letter I wish to make it clear that I congratulate and encourage the Wildlife Resources Commission in the continued publication of this scholarly and entertaining magazine.

Very truly yours,

JAMES MATTOCKS.

The dividing line between game birds and animals and non-game birds and animals is their fitness for human consumption.

WILDLIFE CLUB NEWS

Seth Gordon, one of the country's outstanding conservationists and outdoor writers wrote this recently in a well known sports magazine: "Most sports clubs are like an auto with about two good sparkplugs. The hardy souls who try to keep them going soon tire and quit."

There is more truth than fiction in Gordon's statement as it applies to the situation in wildlife clubs over the country; but here in the Tar Heel State things look a little different. There are more than 100 wildlife clubs in North Carolina which are keeping the ball rolling, and most of these clubs have live sparkplugs to spare. If there is any lack of constructive activity in Tar Heel clubs the shortage is soon to be relieved. Some high-octane fuel is on the way to give the "sparkplugs" something to ignite.

The Wildlife Resources Commission is printing a flock of leaflets which contain some good suggestions for wildlife club activities. The suggestions are designed not only to bring about some constructive game management work on the part of the clubs, but to step up membership enrollment as well.

The ideas in the circular are not based on fiction or fancy. The principles have been tested and proved in many a live-wire club in this and other states. Clubs are supporting border-strip planting for quail habitat restoration, educational programs in coöperation with 4-H and FFA groups, and other constructive activities. Lively clubs do not neglect the recreational aspects of the organization. Frequent barbecues, and fish fries bring the boys out on meeting night. Skeet shooting spurs competition among the members, and brings in new ones.

The Catawba County Wildlife Club is an outstanding example of a group which is making a deliberate and successful effort to bring together sportsmen with a wide variety of interests and some conflicting ideas. Instead of working at cross-purposes the followers of varied sports sit down together and thresh out their differences over platefuls of food cooked and served in the open air.

SPORTSMEN!

Here is an opportunity to show your appreciation to the farmers who have given you the privilege of hunting or fishing on their land.

SEND YOUR FARMER FRIENDS A SUBSCRIPTION

to

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as a token of your gratitude

Just clip out the handy subscription blank below and send it in with 50c for each year's subscription

We will send your friends this attractive gift card to let them know that you are giving them a subscription to show your gratitude.

Dear Friend:

We take pleasure in informing you that

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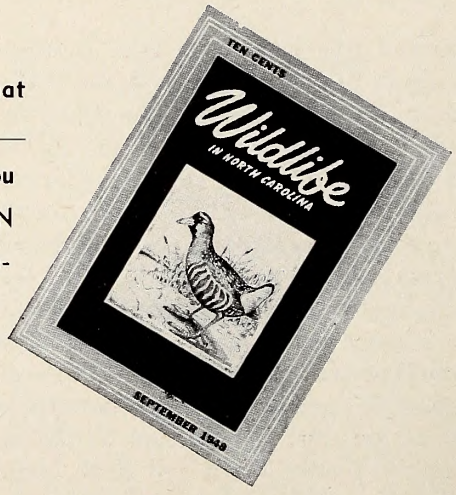
of_____ is giving you a_____ year subscription to WILDLIFE IN NORTH CAROLINA as a token of his appreciation to you for allowing him to hunt on your land. Your subscription begins with the next issue.

Cordially yours,

ROD AMUNDSON, Editor



To: N. C. Wildlife Resources Commission, Box 2919, Raleigh, North Carolina.
Enclosed find $_____ for which send WILDLIFE IN NORTH CAROLINA to:
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HELP ENFORCE OUR FISH AND GAME LAWS

The fish and game of this state belong to the people of the state. People can have an equal opportunity to enjoy the privilege of hunting and fishing only if all play the game according to the rules. Don't be cheated by a few unscrupulous violators. Report their unlawful activity to your local game protector. You owe it to yourself to help enforce the laws. Listed below are the names and addresses and telephone numbers of North Carolina's law enforcement staff.

D. WARREN LUPTON, Chief, Law Enforcement Division,
Raleigh, Phone 6611 Extension 550

SUPERVISORS

BEN H. JAMES, Williamston, Phone 148 Hamilton
WILLIAM NORTON, Smithfield, Phone 2611
TOM L. ROLLINS, Sanford, Phone 739-L
ROBERT F. LOGAN, Statesville, Phone 736-J
RAYMOND WATSON, New Bern, Phone 2641-3
E. W. CAINE, Lumberton, Phone 7164J
C. M. CAPEL, Mt. Gilead, Phone 19
HOMER L. BIGGERS, Morganton, Phone 1124J
GEORGE C. JARRETT, Hayesville, Phone 137

COUNTY	PROTECTOR	PHONE
Alamance	Vance M. Perry, Graham	6-2749
Alleghany	Dewitt T. Bryan, Glade Valley	72F4—Sparta
Anson	V. D. Watts, Wadesboro	311-L
Ashe	Roland H. Koontz, Jefferson	64-M
Avery	W. M. Carpenter, Three Mile	Courthouse, Newland
Beaufort	Floyd J. Lupton, Pantego	3112—Belhaven
Bertie	W. L. Smallwood, Windsor	2086
Bladen	E. W. Woodell, Dublin	2105
Bladen	Sam Culbreth, Elizabethtown	3091—Sheriff's Office
Brunswick	H. T. Bowmer, Southport	3516
Brunswick	Pawnee Duvall, Ashe	8109—Shallotte
Buncombe	Preston S. Bagwell, Asheville	5344 (Day) 309 (Night)
Cabarrus	R. O. Caldwell, Concord	8477
Caldwell	Clyde McLean, Collettsville	No. 2
Carteret	Alex S. Davis, Marshallburg	614
Catawba	John T. Fairchild, Conover	587W
Chatham	A. Eugene Jones, Siler City	291-J
Cherokee	Arnold Dalrymple, Murphy	
Chowan	Robert E. Evans, Edenton	Centerville 202
Columbus	D. S. Hewett, Rt. 1 Whiteville	309-J
Columbus	B. L. Boswell, Bolton	Sta. 3 or 4
Craven	L. E. Warrington, New Bern	3878
Cumberland	Oscar Chadwick, Rt. 3 Fayetteville	365-11
Currituck	William L. Boswood, Maple	320
Dare	J. H. Bratten, Manns Harbor	
Davidson	James B. Greene, Thomasville	22415
Durham	W. Ed Lowe, Rt. 3 Durham	J-5968
Forsyth	John E. Scott, Clemmons	38819
Franklin	Phil B. Wilson, Bunn	4181
Gaston	R. K. Harris, Charlotte	43827
Gates	D. E. Barnes, Corapeake	Corapeake 202
Graham	C. L. Garland, Robbinsville	No. 13J—Sheriff's Office
Granville	Thomas D. Brummitt, Oxford	
Greene	Walter L. Heath, Snow Hill	2436
Guilford	John K. Davis, Oak Ridge	
Halifax	C. M. Pettitt, Enfield	3296
Harnett	T. J. Turlington, Rt. 4 Dunn	4012
Haywood	Daniel M. Taylor, Lake Junaluska	79-J-10 Waynesville
Hertford	James H. Vinson, Winton	196
Hoke	H. R. McLean, Raeford	5145
Iredell	Hugh A. Robertson, Statesville	1289-R
Jackson	W. B. Cope, Sylva	224-W
Johnston	J. Harold King, Smithfield	19-W
Jones	Carlton R. Parker, Pollocksville	37-5
Lee	Jack W. Campbell, Jr., Jonesboro	119-L or 119-J Sanford
Lenoir	D. B. Bell, Kinston	2017
McDowell	Tom W. Gowan, Marion	905 X
Macon	Perry D. Tipton, Hayesville	No. 25
Madison	Raymond C. Ramsey, Mars Hill	Ford Motor Co. Marshall
Martin	Cecil R. Bullock, Robersonville	2155
Mecklenburg	Joseph D. Withers, Charlotte	3-7414
Mitchell	J. W. Ellis, Toecane	324 Bakersville
Montgomery	Cleat Poole, Troy	145-M
Moore	Alex Fields, Southern Pines	7042
Nash	Henry Braswell, Sharpsburg	
New Hanover	Hugh V. Hines, 208 N. 17 St., Wilmington	4878
Northampton	N. B. Hughes, Jackson	786
Onslow	Lonnie Koonce, Richlands	596 c/o Stanly Koonce
Onslow	William I. Mallard, Maysville	37-5 % C. R. Parker Pollocksville
Pamlico	Herman K. Spain, Stonewall	88-3
Pasquotank	Lester A. Pierce, Elizabeth City	Holly 08W5
Pender	W. L. Rivenbark, Burgaw	8712
Perquimans	George E. Winslow, Hertford	3626
Person	Maurice J. Daniel, Roxboro	4573
Pitt	J. O. Teel, Greenville	3042 c/o J. P. Jenkins
Polk	Arthur Pack, Tryon	Police Dept. 495
Randolph	L. R. Davis, Asheboro	
Richmond	Walter Bray, Rockingham	671-J
Robeson	Robert H. Hammer, Lumberton	493-J
Robeson	William E. McConnaughey, Red Springs	3721
Rockingham	A. Dan Neal, Stokesdale	5056 Madison
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Sampson	W. I. Wright, Jr., Ingold	348 Garland
Scotland	LeRoy Bostick, Laurinburg	2811
Stanly	Paul L. Helms, Albemarle	394
Stokes	George A. Barr, King	5111
Surrey	William A. White, Box 742, Mt. Airy	560-R Mt. Airy
Tyrrell	E. L. Mosley, Columbia	2071
Union	S. M. Arnfield, Marshville	24-R
Vance	R. F. Wade, Henderson	3804
Wake	B. D. Perry, Wake Forest	Police Station
Warren	Alton D. Pridgen, Macon	2168
Washington	J. T. Terry, Plymouth	Police Station
Watauga	Walter F. Edmiston, Boone	17
Wayne	Charles A. Warren, Goldsboro	136
Wilson	Charles N. Woolard, Wilson	No. 3
Yadkin	Frank W. Mackie, Yadkinville	15-W
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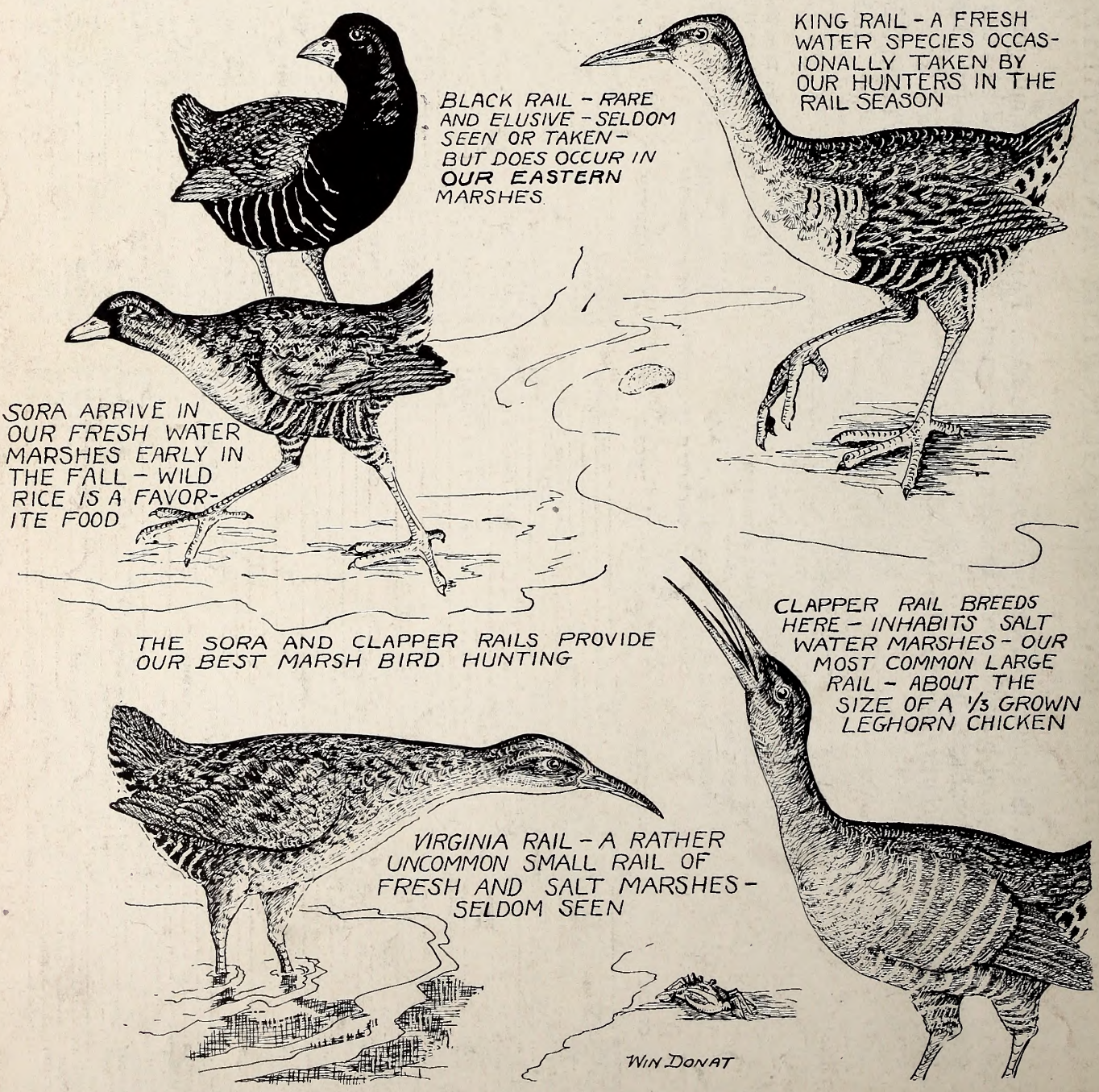
SOME MIGRANT RESIDENTS OF North Carolina Marshes